

1.50 CUBIC YARD LOADER AND 15.3-FOOT BACKHOE

BID SPECIFICATIONS

The following specifications describe the **minimum** requirements for an industrial flat-deck backhoe-loader. The equipment bid shall be new, and of the current production model. All specifications advertised must comply with SAE definitions and standards. Two (2) copies of current literature must be submitted with the bid. Successful bidder must supply operator's manual, parts book, and service manual at time of delivery. Warranty service and parts must be provided within the county where unit is to be delivered.

The following information will help to design a government or public utility bid requirement for **1.50 cubic yard backhoe-loader**.

Engine

The backhoe-loader shall have a 4-cylinder, Tier III certified turbo-charged, charge air-cooled, direct inject diesel engine with a 110 SAE gross HP, 108 SAE net HP @ 2200rpm. The engine shall provide a peak torque rating of 381 ft-lbs. at 1,400 RPM.

The engine also shall have the following:

- Water-cooled, four-cycle, turbo-charged, intercooled, direct-injection diesel
- Tier III Emission Certified
- Electronic common rail high pressure fuel system
- Displacement 273 cu. inches
- Parent metal bore design
- Cooling system protection to -30 degrees Fahrenheit
- Cast oil pan
- Dual-stage air cleaner
- Two-stage fuel filtering system
- Full-flow pressure lubrication with spin-on filter cartridge
- Hand and foot throttle. Hand throttle accessible from both loader and backhoe positions.
- 90amp alternator
- 2.7 kW starter

Power Train

The backhoe loader power train shall be componentized. The power train shall consist of a torque converter drive with a fully synchronized transmission.

The transmission shall also provide the following:

- Four forward speeds
- Two reverse speeds

- Maximum travel speed of 22.8 MPH with standard tires
- Powershift transmission
- Single lever F-N-R control with safety detent
- Speed Matched automatic shifts
- Second to first built in kick down button

The power train shall also have the following:

- Heavy duty, double reduction rear axle with in-board planetary final drive
- Limited slip front and rear differential
- Axles have a minimum dynamic load rating of 16,800 pounds
- Front axle oscillation 22 degrees
- 16.9 x 24 tires
- Single-state torque convertor (2.63 to 1 ratio)
- Torque convertor diameter of 12.2 inches
- Integrated steering cylinders front and rear
- Selectable 4 Wheel Drive

Brakes

The backhoe loader shall have fully sealed, multi-disc hydraulic wet brakes which are self-adjusting and self equalizing.

The brakes shall also have the following features:

- Wet multiple disc brakes with 4 plates per side-internal oil bath (self adjust)
- Pedals operated independently for steering assistance or locked together for simultaneous operation
- Independent dry disc parking/emergency brake and hand lever with audible alarm for parking brake
- Brake discs located on interior drive shaft

Loader and Linkage Features

The loader arms shall be heavy duty and in-line. They shall also have the following features:

- Curved-Arm design with loader arm support
- Dual-acting lift cylinders with friction-welded rod ends

The loader linkage shall have the following features:

- 4-bar bucket linkage for maximum breakout force. Double acting bucket cylinders
- 4 position loader valve (raise, neutral, lower, float, curl, dump)
- Mechanical self-leveling and Return to dig

Loader Bucket

The loader bucket shall be a minimum of 94 inches wide with a 1.50 cubic yard heaped capacity. It shall have the following features:

- Heavy duty
- Pre-drilled edge with BOCE
- Heavy duty lifting eyes
- Factory option multi-purpose 6 X 1 Loader Bucket w/forks and BOCE

Backhoe

The backhoe shall be of an integral mainframe, curved boom, double clevis, center-pivot type design with double acting lift, crowd, bucket, swing, and stabilizer cylinders. It shall also have the following features

- Sealed backhoe pivot pins
- Manual cable activated transport lock
- Flip-Over dirt/street stabilizer pads
- Stabilizer lock valves - pilot
- Excavator-style bucket pin retainers
- Hydraulically extendable, internal slide, dipper stick design
- Hydraulic hammer circuit w/piping to end of boom, w/flow control

Performance

The loader shall be fully serviced unit that includes all standard equipment, standard loader bucket, standard backhoe, standard dipper stick, and ROPS/CAB. The unit weight shall be a minimum of 16,755 pounds. The loader performance shall include:

- Minimum SAE dump cylinder breakout force of 12,160 pounds
- Minimum SAE lift capacity to full height of 7,460 pounds
- Minimum SAE dump clearance of 8' 9" at full height and 45 degree angle
- Minimum SAE dump reach of 2' 4" at full height and 45 degree angle
- Minimum hinge pin height of 11' 3"
- Maximum loader lowering time (return-to-dig) of 2.4 seconds
- Maximum bucket dumping time of 1.5 seconds
- Maximum bucket raising time to full height of 4.7 seconds

Tractor dimensions:

- Minimum wheel base of 86.6 inches
- Maximum overall transport width of 7' 8"
- Maximum height to top of cab of 10 feet

Standard Backhoe:

- Minimum SAE dig depth with standard over-center backhoe for 24 inch flat bottom of 15 feet
- Maximum transport of height of 13 feet
- Minimum digging force, bucket cylinder, 12,618 pounds force
- Minimum digging force, dipper cylinder, 8,396 pounds force
- Minimum truck loading height of 13 feet
- Maximum stabilizer spread in transport position of 7 feet 5 inches with standard flip-over pads
- Minimum stabilizer spread in work position of 10 feet 7 inches with standard flip-over pads
- Minimum boom lift capacity at 8 feet of 3,925 pounds
- Minimum dipper lift capacity of 10 feet of 6,195 pounds
- Minimum bucket rotation of 204 degrees

Steering performance:

- 3.5 steering wheel revolutions from stop to stop
- 16 degrees of axle oscillation
- 37 degree combined steering angle
- Steering Modes – two wheel, four wheel, and crab

Operator Environment

The loader backhoe shall have a cab with two doors. It should also have these features:

- Air Conditioning System – 38,550 BTU
- 2 – lever pilot controls with pattern changer for backhoe
- Glide Ride – Reduces bucket spill while travelling over rough terrain.
- Dual side entry flat deck
- Interior rearview mirror
- Built-in beverage holder and coat hook
- Radio ready
- Key start switch with electrical fuel shut-off
- Horn activation in 2 positions (loader position and backhoe position)
- Molded Floor Mat
- Analog Instrumentation with tachometer, fuel gauge, battery charge, engine coolant temperature and transmission oil temperature.

- Interior dome light
- Tilt steering wheel
- Standard battery disconnect
- 12V auxilliary power outlet
- Emergency beacon ready
- Adjustable side window openings
- One-piece rear window that retracts overhead
- 3-speed heater/blower fan (38,550 BTU)
- Adjustable front sun-screen shade
- Air suspension cloth seat
- Standard 2-inch retractable seatbelt. *Optional*—3 inch
- Maximum dBA rating of 75 per SAE J88

Hydraulics

The loader backhoe hydraulics shall be open center and allow for smooth loader and backhoe operation.

The loader backhoe hydraulics shall also include the following features:

- Dual gear hydraulic pump system rated at minimum 42 GPM
- Minimum system relief pressure of 3,045 PSI
- Oil cooler with thermostat diverter valve to reach operating temperature quickly
- O-Ring Face Seals (ORFS) connections used throughout hydraulic system
- PD type diagnostic port connectors
- Minimum 10-micron spin-on filter element

Serviceability

The loader backhoe shall be easy to service from ground level.

The loader backhoe service shall also include the following:

- Minimum 35-gallon side-mounted fuel tank
- Minimum 9.91-gallon side-mounted hydraulic oil tank
- Engine oil change – 500 hour interval
- Hydraulic oil change – 1000 hour interval

Warranty

The loader backhoe warranty shall include the following:

- Coverage by a 12 month no deductible warranty for parts and labor
- Available extendable warranty:
 - Full machine
 - Powertrain only
 - Powertrain and hydraulics